

31 Dec 2008

QSSC/ IAS Bio cluster …

Grade 12 Biology Cluster … Internal Assessment System (IAS)

Exam No.3 (Total 50 marks)

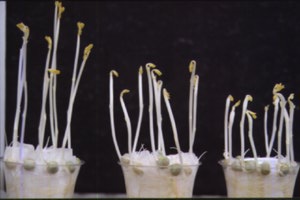
Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Class:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Recommended time: 1 hour**

Section A: Knowledge (total 6 marks)

**Question 1 (9.1):**

Seedlings kept in darkness grow spindly as shown in the photograph below:



The best explanation for this response is that:

1. The seedlings are trying to reach the sun as fast as possible
2. There is a mineral in the soil which causes rapid growth
3. A hormone is secreted that causes stem cells to elongate
4. These are hybrid seeds which have been selected for rapid growth

(1 mark)

**Question 2 (9.2):**

(1 mark)

**Question 3 (9.3):**

(1 mark)

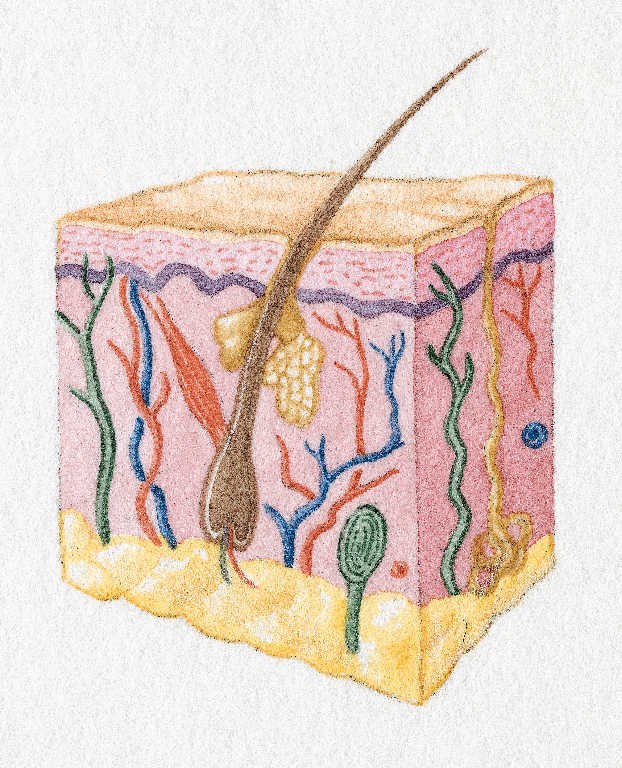
**Question 4 (9.3):**

(1 mark)

**Question 5 (9.3):**

The diagram below shows a cross section of human skin:

Clearly label **two** structures involved with the control of body temperature.



sweat gland

piloerector muscle

capillaries

(2 marks)

Section B: Comprehension (total 24 marks)

**Question 1 (9.1):**Provide a clear explanation of this behavior and its importance

Woodlice are terrestrial crustaceans. They breathe using gills on the underside of the body. Woodlice feed on decaying wood and are most active at night. The photograph below shows clustering in woodlice in the daytime.



1. State one reason why woodlice may be more active at night than in the daytime:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(1 mark)

There is increased risk of desiccation in daytime/humidity is higher at night/avoiding diurnal predators

1. Suggest how clustering is an advantage to woodlice:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Clustering **reduces surface area** therefore **water is conserved**

1 mark for statement linking gills to need for liquid water

**Question 2 (9.2):**

Give an example of a response to a named environmental stimulus by one organism you have studied in class

Name of organism:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Type of stimulus:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mark)
2. Description of response:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mark)

**Question 3 (9.2):**

**Question 4 (9.2):**

**Question 5 (9.3):**

Two early symptoms of hypothermia are shivering and a pale face.

(a) Define the term hypothermia.

(b) Explain how each of the two symptoms of hypothermia help **restore** normal body temperature.

(i) Shivering

(ii) Pale face

**Question 6 (9.4):**

Section C: Application (total 15 marks)

**Question 1 (9.2):**

The diagram below shows how water temperature is kept constant in a water bath:

Thermostat switches element off

Thermostat switches element on

Water bath temperature

Water bath temperature

a

b

1. Describe what is happening to the water bath at arrows **a** and **b** in the diagram:

At **a**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mark)

At **b**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mark)

1. Use a diagram to show the general relationship between effectors and receptors in a negative feedback loop

(3 marks)

**Question 2 (9.3):**

**Question 3 (9.4):**

Section D: Analysis (total 5 marks)

**Question 1: (9.5)**